

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
FGA15N120ANTD	FGA15N120ANTD	TO-3P	--	--	30

Electrical Characteristics of the IGBT T_C = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
I _{CES}	Collector Cut-Off Current	V _{CE} = V _{CES} , V _{GE} = 0V	--	--	3	mA
I _{GES}	G-E Leakage Current	V _{GE} = V _{GES} , V _{CE} = 0V	--	--	± 250	nA
On Characteristics						
V _{GE(th)}	G-E Threshold Voltage	I _C = 15mA, V _{CE} = V _{GE}	4.5	6.5	8.5	V
V _{CE(sat)}	Collector to Emitter Saturation Voltage	I _C = 15A, V _{GE} = 15V	--	1.9	2.4	V
		I _C = 15A, V _{GE} = 15V, T _C = 125°C	--	2.2	--	V
		I _C = 30A, V _{GE} = 15V	--	2.3	--	V
Dynamic Characteristics						
C _{ies}	Input Capacitance	V _{CE} = 30V, V _{GE} = 0V, f = 1MHz	--	2650	--	pF
C _{oes}	Output Capacitance		--	143	--	pF
C _{res}	Reverse Transfer Capacitance		--	96	--	pF
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C = 15A, R _G = 10Ω, V _{GE} = 15V, Inductive Load, T _C = 25°C	--	15	--	ns
t _r	Rise Time		--	20	--	ns
t _{d(off)}	Turn-Off Delay Time		--	160	--	ns
t _f	Fall Time		--	100	180	ns
E _{on}	Turn-On Switching Loss		--	3	4.5	mJ
E _{off}	Turn-Off Switching Loss		--	0.6	0.9	mJ
E _{ts}	Total Switching Loss		--	3.6	5.4	mJ
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C = 15A, R _G = 10Ω, V _{GE} = 15V, Inductive Load, T _C = 125°C	--	15	--	ns
t _r	Rise Time		--	20	--	ns
t _{d(off)}	Turn-Off Delay Time		--	170	--	ns
t _f	Fall Time		--	150	--	ns
E _{on}	Turn-On Switching Loss		--	3.2	4.8	mJ
E _{off}	Turn-Off Switching Loss		--	0.8	1.2	mJ
E _{ts}	Total Switching Loss		--	4.0	6.0	mJ
Q _g	Total Gate Charge	V _{CE} = 600 V, I _C = 15A, V _{GE} = 15V	--	120	180	nC
Q _{ge}	Gate-Emitter Charge		--	16	22	nC
Q _{gc}	Gate-Collector Charge		--	50	65	nC

Electrical Characteristics of DIODE $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units	
V_{FM}	Diode Forward Voltage	$I_F = 15\text{A}$	$T_C = 25^\circ\text{C}$	--	1.7	2.7	V
			$T_C = 125^\circ\text{C}$	--	1.8	--	
t_{rr}	Diode Reverse Recovery Time	$I_F = 15\text{A}$ $di/dt = 200\text{ A}/\mu\text{s}$	$T_C = 25^\circ\text{C}$	--	210	330	ns
			$T_C = 125^\circ\text{C}$	--	280	--	
I_{rr}	Diode Peak Reverse Recovery Current		$T_C = 25^\circ\text{C}$	--	27	40	A
			$T_C = 125^\circ\text{C}$	--	31	--	
Q_{rr}	Diode Reverse Recovery Charge		$T_C = 25^\circ\text{C}$	--	2835	6600	nC
			$T_C = 125^\circ\text{C}$	--	4340	--	

Typical Performance Characteristics

Figure 1. Typical Output Characteristics

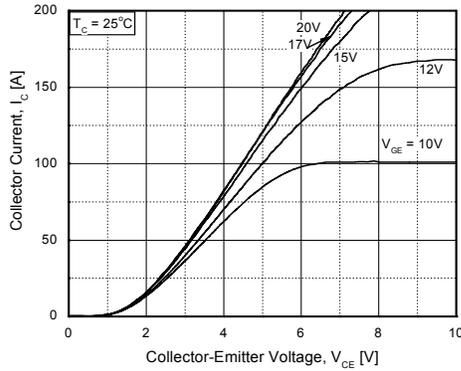


Figure 2. Typical Saturation Voltage Characteristics

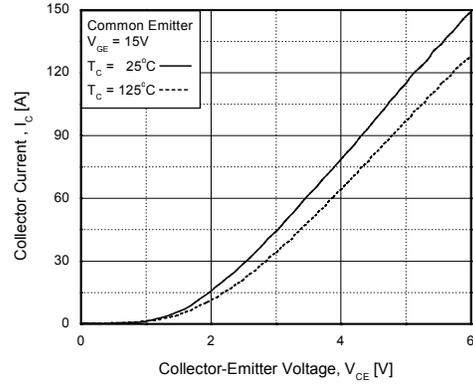


Figure 3. Saturation Voltage vs. Case Temperature at Variant Current Level

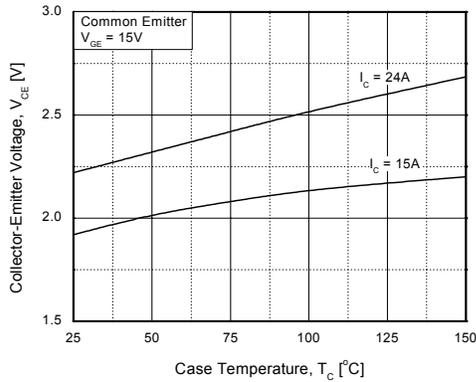


Figure 4. Saturation Voltage vs. V_GE

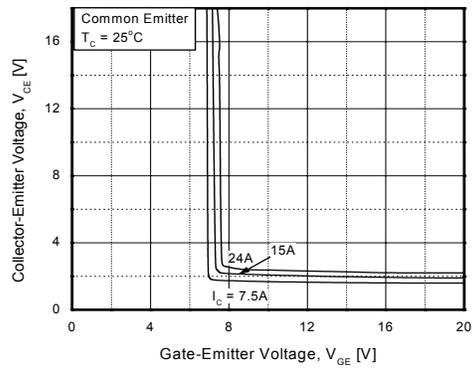


Figure 5. Saturation Voltage vs. V_GE

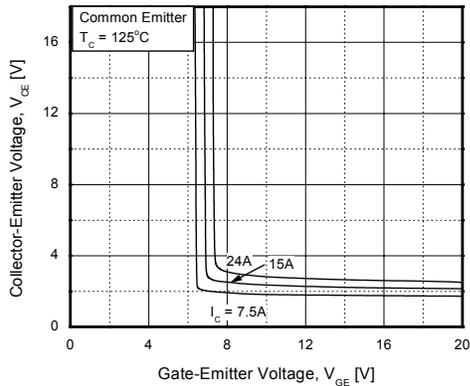
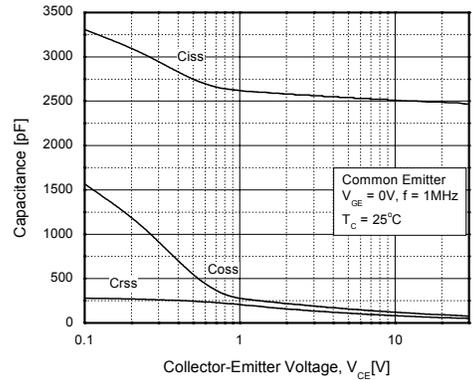


Figure 6. Capacitance Characteristics



Typical Performance Characteristics (Continued)

Figure 7. Turn-On Characteristics vs. Gate Resistance

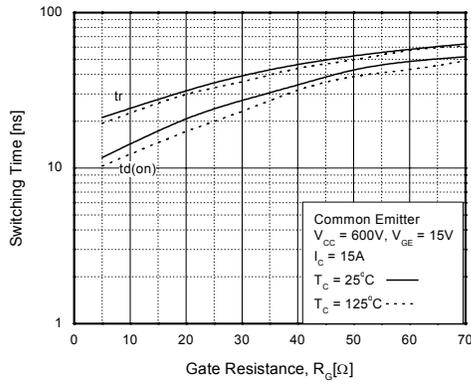


Figure 8. Turn-Off Characteristics vs. Gate Resistance

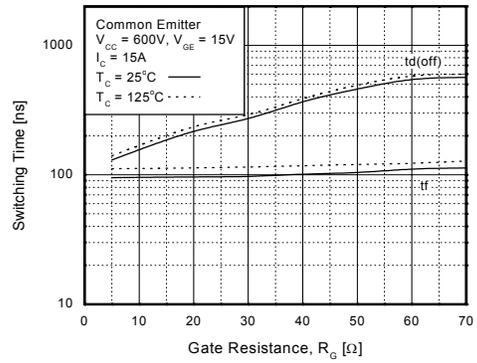


Figure 9. Switching Loss vs. Gate Resistance

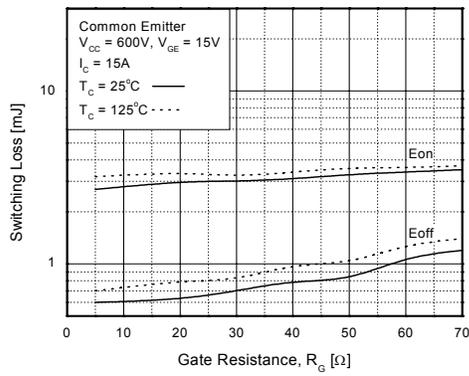


Figure 10. Turn-On Characteristics vs. Collector Current

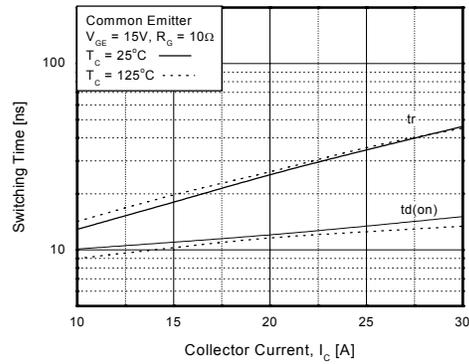


Figure 11. Turn-Off Characteristics vs. Collector Current

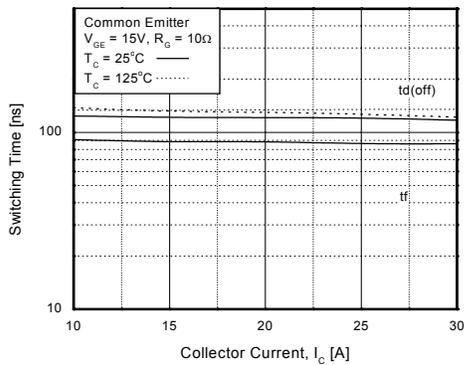


Figure 12. Switching Loss vs. Collector Current

